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Sebastian Dorr

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NOVAK DRUCE CONNOLLY BOVE + QUIGG LLP
P O BOX 2207
WILMINGTON, DE 19899-2207

EXAMINER

SALVITTI, MICHAEL A

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte SEBASTIAN DORR, HEINO MULLER,
HELMUT MULLER, and TANJA HEBESTREIT

Appeal 2012-008345
Application 12/001,830
Technology Center 1700

Before ADRIENE LEPIANE HANLON, CHUNG K. PAK, and
TERRY J. OWENS, *Administrative Patent Judges*.

OWENS, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

The Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 1-5. We have jurisdiction under 35 U.S.C. § 6(b).

The Invention

The Appellants claim a process for making a self-crosslinking aqueous polyurethane dispersion. Claim 1 is illustrative:

1. A process for preparing self-crosslinking aqueous polyurethane dispersions, comprising the following steps:

I. reacting a

- a1) polyisocyanate with a mixture of
- a2) anionic hydrophilicizing agent containing at least one isocyanate-reactive group and having an average OH functionality of ≥ 1 and
- a3) at least one polyol component having an average OH functionality of >1 , either the mixture of a2) and a3) or component a1) comprising k) at least one catalyst,

II. obtaining an OH-functional and NCO-free polyurethane from step I, the polyurethane subsequently being mixed with

III. a4) a reactive blocking agent for isocyanate groups selected from the group consisting of oximes, amines, pyrazoles, and mixtures thereof,

IV. subsequently reacting this mixture from step III with a5) one or more polyisocyanates being identical to or different from the polyisocyanate used in a1), and subsequently

V. obtaining a physical mixture of OH-functional, NCO-free polyurethane and blocked polyisocyanate from step IV, wherein subsequently either

VI. the acid groups of the OH-functional polyurethane are subjected to total or partial deprotonation by addition of a6) a neutralizing agent

VII. and the polyurethane obtained from this step VI is dispersed in water or step VII takes place before step VI.

The References

Burkhardt	US 4,098,933	Jul. 4, 1978
Melchiors	US 2002/0165334 A1	Nov. 7, 2002

The Rejections

The claims stand rejected under 35 U.S.C. § 103 as follows: claims 1-4 over Melchiors and claim 5 over Melchiors in view of Burkhardt.

OPINION

We affirm the rejections.

The Appellants argue claims 1-4 as a group and, although an additional reference is applied in the rejection of claim 5, the Appellants do not provide a substantive argument as to the separate patentability of that claim (Br. 3-7). We therefore limit our discussion to one claim, i.e., claim 1, which is the sole independent claim. Claims 2-5 stand or fall with that claim. *See* 37 C.F.R. § 41.37(c)(1)(vii) (2007).

The Appellants' claim 1 requires mixing an OH-functional and NCO-free polyurethane with a reactive blocking agent for isocyanate groups, wherein the reactive blocking agent can be a pyrazole, and then reacting that mixture with one or more polyisocyanates.

Melchiors mixes an OH-functional and NCO-free polyurethane with a polyisocyanate which has been blocked with a pyrazole derivative (¶¶ 0007-11, 0035).

The Appellants argue that one of ordinary skill in the art would not have mixed Melchiors' OH-functional polyurethane with an unblocked

polyisocyanate because such a person would have expected some of the unblocked polyisocyanate to react with the polyurethane's OH groups instead of the pyrazole derivative blocking agent, thereby resulting in premature crosslinking which would render the composition unsuitable for its intended purpose of crosslinking after application to a surface (Br. 4-5).

In Melchiors' Example D9 an OH-functional, NCO-free polyurethane resin melt is prepared by heating a mixture of polyols and a diisocyanate to 130 °C and keeping the mixture at that temperature until no NCO groups can be detected (¶¶ 0100, 0103). The resin melt then is cooled to 65 °C and mixed with a blocked polyisocyanate prepared by mixing a polyisocyanate with a pyrazole derivative blocking agent at 50 °C in such a way that the temperature does not exceed 65 °C (¶¶ 0062, 0102). Thus, Melchiors would have indicated to one of ordinary skill in the art that isocyanate groups react with a pyrazole derivative blocking agent at a lower temperature (50 °C) than the temperature (130 °C) required to react them with OH groups to form urethane groups.

Establishing a prima facie case of obviousness requires showing that one of ordinary skill in the art would have had both an apparent reason or suggestion to modify the prior art and predictability or a reasonable expectation of success in doing so. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007); *In re Vaeck*, 947 F.2d 488, 493 (Fed. Cir. 1991).

The Examiner finds that Melchiors would have fairly suggested, to one of ordinary skill in the art, mixing the pyrazole derivative blocking agent with the OH-functional polyurethane after the OH-functional polyurethane has been cooled from 130 °C to 65 °C (¶¶ 0100, 0102), and then reacting the pyrazole derivative blocking agent with a polyisocyanate at the lower

temperature to reduce the equipment and process step requirements, thereby resulting in cost and time savings (Ans. 7). Because the Appellants have not challenged that finding, we accept it as fact. *See In re Kunzmann*, 326 F.2d 424, 425 n.3 (CCPA 1964). Melchior's indication that at the lower 65 °C temperature the added polyisocyanate's isocyanate groups would react with the pyrazole derivative blocking agent but not the polyurethane's OH groups (¶¶ 0062, 0100, 0102) would have provided one of ordinary skill in the art with a reasonable expectation of success in doing so.¹

Thus, we are not persuaded of reversible error in the rejections.

DECISION/ORDER

The rejections under 35 U.S.C. § 103 of claims 1-4 over Melchior and claim 5 over Melchior in view of Burkhardt are affirmed.

It is ordered that the Examiner's decision is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED

kmm

¹ The Appellants' argument regarding reaction between aliphatic amines and isocyanate groups (Br. 5-6) is not well taken for the reasons given by the Examiner (Ans. 16).